

**A NEW SPECIES OF *NACADUBA* MOORE (LEPIDOPTERA:  
LYCAENIDAE) FROM NIUE, SOUTHWESTERN PACIFIC OCEAN**

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**Abstract**

*Nacaduba niueensis* sp. n. is described and illustrated from Niue in the southwestern Pacific Ocean. The status of the previously illustrated female of this species is clarified.

**Introduction**

Miller and Miller (1993) recorded three species of Lycaenidae from the island of Niue. These included a species they tentatively identified as *Spalgis* sp., plus *Jamides bochus argentina* Prittwitz, 1867 and *Zizina otis mangoensis* (Butler, 1884). In their paper, they suggested that the first mentioned species, of which they had a single female specimen, may belong to the genus *Spalgis* Moore, 1879 as it bore 'markings reminiscent of *Spalgis epeus* (Westwood, [1851]), and particularly, *S. e. nubilus* Moore, [1884] but bolder and more pronounced.' While they described and illustrated the female and the female genitalia of this specimen, they did not describe it as a new species. I collected a single male specimen, clearly the same species as that illustrated by Miller and Miller (1993), on Niue in December 2009. Examination of both specimens showed they did not belong to the genus *Spalgis* and they are described here as a new species in the genus *Nacaduba* Moore, [1881].

***Nacaduba niueensis* sp. n.**

(Figs 1-6)

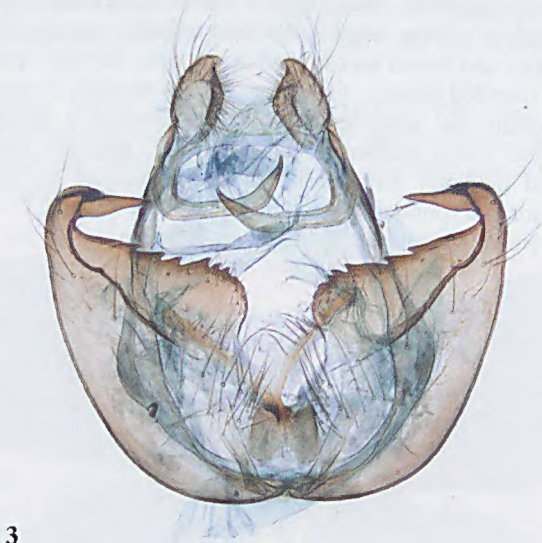
*Types.* *Holotype* ♂, NIUE: Namukulu, north-west coast, 10 km NNW of Alofi by coastal road, 18°58'59.7"S 169°53'48"W, 9.xii.2009, R.B. Lachlan, K300568 (in Australian Museum, Sydney). *Paratype* ♀, Niue, Alofi, 0-100 m elevation, xii.1979, N.L.H. Krauss (in Bishop Museum, Honolulu, Hawaii).

*Description.* Male (Figs 1-4). Forewing length 13 mm. Antennae with dorsal surface black, ventral surface black with thin, white segmental bands, clubs elongated. Eyes and palpi hairy. Thorax black with overlay of long, pale blue hair scales. Forewing and hind wing as in Fig. 1; ground colour unicolorous dark lilac-brown, wing fringes darkish brown, lighter at tips, lilac scales more evident when viewed obliquely. Forewing underside as in Fig. 2; ground colour greyish brown, lightly irrorated with pale iridescent scales at base, traversed by three pairs of prominent, undulating, whitish edged, dark brown lines forming bands; the subbasal band runs from costa to inner margin, curving distally, the short median band runs from just below costa to vein CuA<sub>1</sub>, the third postmedian band runs from costa to vein 1A+2A; a subterminal, whitish edged, dark brown irregular line runs from the costa to vein 1A+2A; a row of dark brown, flattened triangular terminal spots runs from the apical area to vein 1A+2A. Hind wing underside as in Fig. 2; ground

colour slightly darker than forewing, more heavily irrorated with iridescent pale blue-green scales basally; traversed by three pairs of bands, as in forewing but closer in proximity to each other; the subbasal band is slightly straighter than the forewing band, the median and postmedian bands clearly join to form a single band from vein  $CuA_1$  to inner margin; a prominent, subterminal, dark brown zig-zag line, edged whitish basally, runs from apex to just past tornus; there are six small, terminal, dark brown triangular spots, each edged by whitish scales; the two largest triangular spots between veins  $CuA_2$  and  $M_3$  have their basal halves covered with bright, pale blue iridescent scales; a small number of pale blue iridescent scales are found on each side of vein  $1A+2A$  at the inner margin; there are no tails on this species.



**Figs 1-2.** *Nacaduba niueensis* sp. n., holotype male: (1) upperside; (2) underside.



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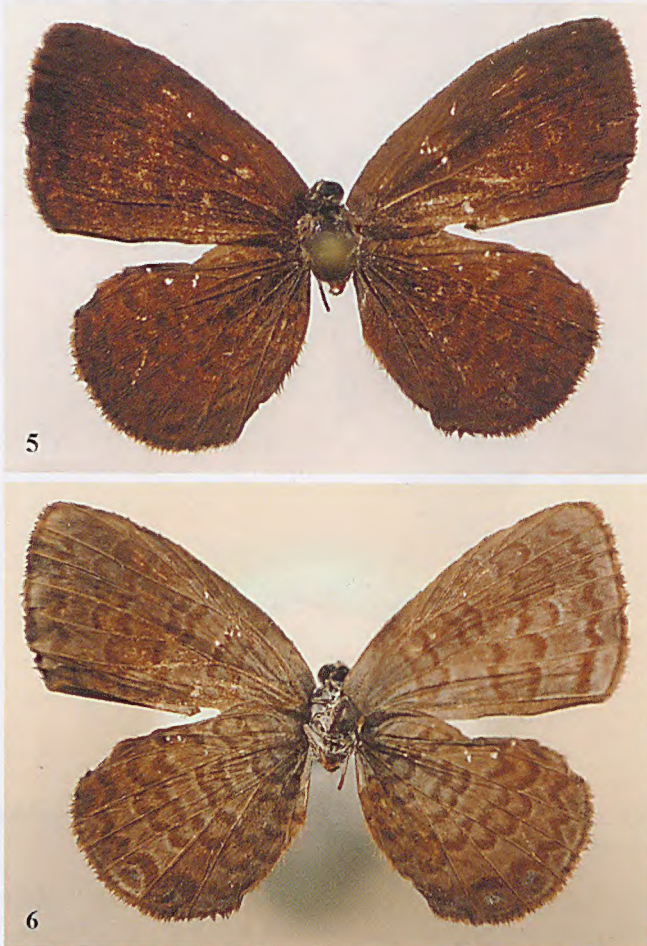


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**Figs 3-4.** *Nacaduba niueensis*, holotype male: (3) genitalia, with aedeagus removed, viewed ventrally; (4) phallus, viewed dorsolaterally.

Male genitalia (Figs 3-4). Tegumen with sociuncus weakly saddle-shaped, ventrolaterally rhomboid-shaped; uncus lobes bulbous, hirsute, heavily sclerotized on outer margin and hooked upwards apically; vinculum rounded posteriorly and pronounced where it meets tegumen; brachia fairly long,

bowed sharply along one third of length, of approximately equal width, tapering to a lightly sclerotized upward-curving apical tooth; juxta highly modified, basally sub-oval, long, lightly hirsute appendages extending half way along length of valvae, weakly clubbed apically but tapering to a point; valvae very large and broad across median section, heavily sclerotized outer margin gently rounded basally, then more or less straight to apex, inner edge heavily sclerotized and serrated inwardly, tapering to a sharp, prominent, sclerotized apical tooth, numerous setae basally, sparsely hirsute at apex; aedeagus broad medially with fleshy ductus connected to median part of phallus, posterior end rounded, vesica fleshy, tongue-shaped.



Figs 5-6. *Nacaduba niueensis* sp. n., paratype female: (5) upperside; (6) underside.

Female (Figs 5-6). Similar to male; upperside unicolorous dark grey-brown, slightly darker on distal half of forewing and hind wing; underside a lighter grey-brown ground colour with markings almost identical to male; the iridescent scaling seen on the male is vestigial on the female in the same wing areas.

Female genitalia. Miller and Miller (1993) described and illustrated the female genitalia but referred to it as a *Spalgis* species, noting that the papillae anales were aberrant 'with the distal margin modified into a single point on the left and a bifid margin on the right'.

*Etymology.* The specific name *niueensis* is derived from the Pacific island nation of Niue, the only known locality for the species.

*Distribution.* At present, *N. niueensis* is recorded only from the island of Niue, southwestern Pacific Ocean and is assumed to be endemic.

### Discussion

Niue is a single, remote, young (Pliocene), raised coral island of just 260 km<sup>2</sup> in the southwestern Pacific Ocean. It lies approximately 420 km east of the central Tongan islands, 520 km SSE of American Samoa and 1,065 km ENE of Rarotonga in the Cook Islands. Due to its remoteness, there are very few species of butterflies recorded from Niue and no previously recorded endemic species or subspecies.

Miller and Miller (1993) suggested that this species might belong to the genus *Spalgis* largely because the markings on the underside were most similar to *S. epius nubilus*. However, that species is confined to the Andaman Islands and Pulau Tioman off the east coast of the Malay Peninsula (D'Abrera 1986). Although *N. niueensis* appears superficially similar to *S. epus* on the upperside, the undersides are very different, with *Spalgis* species having lighter undersides that also lack the distinctive, bold dark markings that are a diagnostic feature of *N. niueensis*. Parsons (1998) recorded three species of *Spalgis* from the island of New Guinea but only one species from Papua New Guinea. He also described *Spalgis* as an uncommon, weak-flying species. This alone makes it highly unlikely that any *Spalgis* will be found any further east in the Pacific islands.

This new, distinctive species is here placed in the genus *Nacaduba* Moore, [1881], as Tennent (2001) correctly pointed out that many *Nacaduba* species have undersides characterised by a series of fine, lunulate-edged lines often with subterminal spots surrounded, in part, by varying amounts of iridescent blue and blue-green scales on the underside of the hind wings. The ventral surfaces of the new species clearly fall within these parameters. The male genitalia of *N. niueensis* broadly conform to the description given by Hirowatari (1992) for *Nacaduba*, with a small dorsum and slender lateral arms of the juxta. The female genitalia, as illustrated by Miller and Miller (1993), show the origin of the ductus seminalis closer to the ostium than is

usual in *Nacaduba* but very unlike the female genitalia of *Tartesa* Hirowatari, 1992 from the Solomon Islands, to which *Nacaduba* is closely related. The genus *Nacaduba* extends widely into the Pacific.

*Spalgis*, in the subfamily Miletinae, is unrelated to *Nacaduba* in the subfamily Polyommatainae. In *Spalgis*, the forewing veins Sc and R<sub>1</sub> are separate, while in the *Nacaduba* group of the Polyommatainae they are anastomosed, as they are in the species described here. The male genitalia of *Spalis epeus*, as illustrated by Eliot (1973), are very different from those of *N. niueensis*.

Given the very distinctive undersides (Figs 2, 6) of both sexes, *N. niueensis* cannot be confused with any other species of Lycaenidae recorded from the region.

### Acknowledgements

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